1. A current-perpendicular-to-plane (CPP) giant magnetoresistive (GMR) magnetic field sensor of the synthetic spin valve type having improved GMR and magnetorestriction qualities comprising:

a substrate;

a seed layer formed on the substrate;

an antiferromagnetic pinning layer formed on the seed layer;

a synthetic antiferromagnetic pinned layer formed on the pinning layer, said pinned layer further comprising ferromagnetic layer AP2, formed on said pinning layer, a non-magnetic coupling layer formed on AP2 and ferromagnetic layer AP1 formed on said coupling layer;

a laminated free layer formed on layer AP1 of the pinned layer, the free layer including at least one ultra-thin lamina of a first ferromagnetic material having a positive coefficient of magnetostriction and at least one layer of a second ferromagnetic material having a negative coefficient of magnetostriction;

a capping layer formed on said free layer.

2. The sensor of claim 1, wherein said first ferromagnetic material is any of the ferromagnetic iron rich alloys of the form Co_xFe_{1-x} with x between .25 and .75 and said second ferromagnetic material is $Co_{90}Fe_{10}$.

3. The sensor of claim 2 wherein each lamina of said first ferromagnetic material is formed to a thickness that is less than approximately 3 angstroms and wherein each layer of the second ferromagnetic material is formed to a thickness between approximately 2.5 and 15 angstroms.

4. The sensor of claim 2 wherein said AP1 layer includes at least one layer of said first ferromagnetic material formed to a thickness between approximately 2.5 and 15 angstroms, at least one layer of said second ferromagnetic material of thickness between approximately 2.5 and 15 angstroms.

4. The sensor of claim 1, 2, 3 or 4 wherein at least one layer of the second ferromagnetic material is formed on a Cu spacer layer of thickness between approximately 1 and 4 angstroms.

5. The sensor of claim 1, 2 , 3 or 4 wherein at least one layer of the second ferromagnetic material has a Cu spacer layer of thickness between approximately 1 and 4 angstroms formed thereupon.

6. The sensor of claim 1, 2, 3 or 4 wherein at least one lamina of the first ferromagnetic material is formed on a Cu spacer layer of thickness between approximately 1 and 4 angstroms.

7. The sensor of claim 1, 2, 3 or 4 wherein at least one lamina of the first ferromagnetic material has a Cu spacer layer of thickness between approximately 1 and 4 angstroms formed thereupon.

8. The sensor of claim 1 wherein said free layer comprises:

a first layer of $Co_{90}Fe_{10}$;

a first lamina of $Fe_{50}Co_{50}$ formed on said first layer;

a second layer of $Co_{90}Fe_{10}$ formed on said first lamina;

a first spacer layer of Cu formed on said first lamina;

a third layer of $Co_{90}Fe_{10}$ formed on said first spacer layer;

a second lamina of $Fe_{50}Co_{50}$ formed on said second layer;

a fourth layer of $Co_{90}Fe_{10}$ formed on said second lamina;

a second spacer layer of Cu formed on said third layer;

a fifth layer of $Co_{90}Fe_{10}$ formed on said second spacer layer.

9. The sensor of claim 8 wherein the thickness said first layer is between approximately 5 and 15 angstroms, the thickness of said second, third, fourth and fifth layers is between approximately 2.5 and 7.5 angstroms, the thickness of each lamina is less than approximately 3 angstroms and the thickness of each spacer layer is between approximately 1 and 4 angstroms.

10. The sensor of claim 9 wherein the laminated configuration of the free layer produces a positive coefficient of magnetostriction.

11. The sensor of claim 7 wherein said AP1 layer includes a lamination of bilayers, wherein each bilayer is a layer of $Fe_{50}Co_{50}$, of thickness between approximately 7.5 and 15 angstroms, formed on a layer of Cu of thickness between approximately 1 and 4 angstroms.

12. A method of forming a current-perpendicular-to-plane (CPP) giant magnetoresistive (GMR) magnetic field sensor of the synthetic spin valve type having improved GMR qualities and a coefficient of magnetostriction that can be varied from positive to negative by changing a laminated configuration of its free layer comprising:

providing a substrate;

forming a seed layer on the substrate;

forming an antiferromagnetic pinning layer on the seed layer;

forming a synthetic antiferromagnetic pinned layer on the pinning layer, said formation further comprising forming ferromagnetic layer AP2 on said pinning layer, forming a non-magnetic coupling layer on AP2 and forming ferromagnetic layer AP1 on said coupling layer;

forming a laminated free layer on the pinned layer, said laminated free layer including at least one ultra-thin lamina of a first ferromagnetic material having a positive coefficient of magnetostriction and at least one layer of a second ferromagnetic material having a negative coefficient of magnetostriction, wherein the number of laminas and the

number of layers of said second ferromagnetic material determine a coefficient of magnetostriction of the free layer having a value within a range from positive to negative;

a capping layer formed on said free layer.

13. The method of claim 12, wherein said first ferromagnetic material is the iron rich ferromagnetic alloy of the form Co_xFe_{1-x} with x between .25 and .75 and said second ferromagnetic material is $Co_{90}Fe_{10}$.

14. The method of claim 13 wherein each lamina of said first ferromagnetic material is formed to a thickness that is less than approximately 3 angstroms and wherein each layer of said second ferromagnetic material is formed to a thickness between approximately 2.5 and 15 angstroms.

15. The method of claim 13 wherein said AP1 layer includes at least one layer of said first ferromagnetic material formed to a thickness between approximately 2.5 and 15 angstroms, at least one layer of said second ferromagnetic material of thickness between approximately 2.5 and 15 angstroms.

16. The method of claim 12, 13, 14 or 15 wherein at least one layer of the second ferromagnetic material is formed on a Cu spacer layer of thickness between approximately 1 and 4 angstroms.

17. The method of claim 12, 13, 14 or 15 wherein at least one layer of the second ferromagnetic material has a Cu spacer layer of thickness between approximately 1 and 4 angstroms formed thereupon.

18. The method of claim 12, 13, 14 or 15 wherein at least one lamina of the first ferromagnetic material is formed on a Cu spacer layer of thickness between approximately 1 and 4 angstroms.

19. The method of claim 12, 13, 14 or 15 wherein at least one lamina of the first ferromagnetic material has a Cu spacer layer of thickness between approximately 1 and 4 angstroms formed thereupon.

20. The method of claim 12 wherein formation of said free layer comprises:

forming a first layer of $Co_{90}Fe_{10}$;

forming a first lamina of $Fe_{50}Co_{50}$ on said first layer;

forming a second layer of $Co_{90}Fe_{10}$ on said first lamina;

forming a first spacer layer of Cu on said first lamina;

forming a third layer of $Co_{90}Fe_{10}$ on said first spacer layer;

forming a second lamina of $Fe_{50}Co_{50}$ on said second layer;

forming a fourth layer of $Co_{90}Fe_{10}$ on said second lamina;

forming a second spacer layer of Cu on said third layer;

forming a fifth layer of $Co_{90}Fe_{10}$ on said second spacer layer.

21. The method of claim 20 wherein the thickness said first layer is between approximately 5 and 15 angstroms, the thickness of said second, third, fourth and fifth layers is between approximately 2.5 and 7.5 angstroms, the thickness of each lamina is less than approximately 3 angstroms and the thickness of each spacer layer is between approximately 1 and 4 angstroms.

22. The method of claim 12 wherein the laminated configuration of the free layer produces a positive coefficient of magnetostriction.

23. The sensor of claim 7 wherein said AP1 layer includes a lamination of bilayers, wherein each bilayer is a layer of $Fe_{50}Co_{50}$, of thickness between approximately 7.5 and 15 angstroms, formed on a layer of Cu of thickness between approximately 1 and 4 angstroms.